

JOURNAL

OF THE

ASIATIC SOCIETY OF BENGAL,



Vol. LXXII. Part II.—NATURAL SCIENCE.

No. 2.—1903.

Noviciæ Indicæ XX. *Some Additional Scrophularinæ.*—By
D. PRAIN.

[Received 24th March 1903. Read 1st April 1903.]

Having had occasion to assort the material of the natural order *Scrophularinæ*, preserved in the Herbarium attached to the Royal Botanic Garden at Shibpur, the writer finds, as is usually the case, that there are a number of species belonging to the order which are new to India in the sense that they are not included in the account of the family published by Sir J. D. Hooker in the *Flora of British India*, vol. iv. (1884). In almost every case the new record is the result of the extension of the territories of the Indian Empire along its north-western and its north-eastern frontiers. Following the practice, commenced now fifteen years ago, of providing diagnoses of species thus found to be new to the Indian flora, arranged according to the method of the *Flora of British India*, for the benefit of members of the Society who may be botanising near the Indian frontiers, the writer now presents the necessary supplement to this particular natural family. Having regard, however, to the needs of those who may be working in the field elsewhere than on the frontiers, new localities for species already accounted for in the *Flora of British India* are duly noted.

1. ANTICHARIS ENDL.

1. ANTICHARIS LINEARIS *Hochst.*

Add to localities :—RAJPUTANA ; Bikanir, where it is known as "Dhunnya," *Major Roberts* !

The capsules, in all the Indian specimens at Calcutta, are pubescent.

2. VERBASCUM LINN.

3. VERBASCUM ERIANTHUM *Benth., DC. Prodr. x. 236 ; Boiss. Flor. Orient. iv. 319 ;* thinly ashy-pubescent, lower leaves oblong narrowed to a petiole, upper auricled cordate obtuse or subacute, flowers paniced.

BRITISH BELUCHISTAN ; Ziarat, *Lace* ! Harnai and Lakkahana, *Duthie's Collectors* ! CHITRAL ; near Drosh, *Hamilton* ! Kala Drosh, *Harriss* ! between Mirga and Dir, *Harriss* ! DISTRIB. Afghanistan ; W. Beluchistan.

Biennial ; stem 3-4 feet, blackish, paniculately branched upwards. *Leaves* crenate, radical up to 18 in. long, cauline 4-8 in. *Flowers* in distant tomentose fascicles on the 6-8 in. long branches of the terminal panicle ; pedicels unequal, rather shorter than the calyx, .25 in. long. *Calyx*-lobes triangular, partite to the middle. *Corolla* .5 in. across. *Stamens* 5, filaments woolly. *Capsule* ovate, twice as long as calyx.

4. LINARIA JUSS.

2. LINARIA INCANA *Wall. Pl. As. Rar. ii. 43 ; Benth., DC. Prodr. x. 270. L. cabulica Hook. f., Flor. Brit. Ind. iv. 251, quoad descript. L. ramosissima VAR. pubescens Stocks Mss., Flor. Brit. Ind. iv. 251.*

DECCAN : *Perrottet* ! C. INDIA : Jubbulpore, *Beddome* ! Goona, *King* ! NEPAL : Rambun, *Wallich* 3910 ! N.W. HIMALAYA : Sirmore, *Vicary* ! Jaunsar, *Gamble* ! Fagu, *Gamble* ! Hazara, *Stewart* ! Kangra, *Stoliczka* ! Chumba, *Clarke* 23566 in part, mixed with *L. ramosissima* ! Rawal Pindi, *Aitchison* 213 in part, mixed with *L. ramosissima* ! RAJPUTANA : Abu, *King* ! N. INDIA : Etawah, *Hume* ! CHITRAL, near Drosh, *Harris* !

The above are the Herb. Calcutta localities for this plant, which the writer is inclined to agree with Clarke and Aitchison in uniting with *L. ramosissima*. This is the species with softly hirsute leaves and echinate or, as Benthham expresses it "muricate-tubercular" seeds, exactly like those of *L. ramosissima*.

3. LINARIA CABULICA *Benth., DC. Prodr. x. 270. L. incana Hook. f., Flor. Brit. Ind. iv. 252.*

AFGHANISTAN : *Griffith* K.D. 3859, named by Benthham ! KASHMIR : Srinagar, *Clarke* 29124 ! *Gammie* ! *Falconer* 763 !

The above are the localities of the specimens in Herb. Calcutta of this species, which is, as an authentic sheet named by Benthham shows, the one with flowers, capsules, and seeds larger than in *L. ramosissima* and *L. incana* ; in this plant the seeds have a closely roughly pitted testa, not echinate or "muricate-tubercular."

5. *LINARIA GRIFFITHII* Benth., DC. *Prodr.* x. 272 (*Griffithsii*); Boiss. *Flor. Orient.* iv. 370; perennial, erect, glabrous, leafy, leaves alternate glaucous, oblong, flowers shortly pedicelled, spur rather shorter than the corolla-tube; seeds discoid marginate.

BRITISH BELUCHISTAN: Shelabagh, 6,000 ft., Lacey! DISTRIB. Afghanistan.

Stem 1·5-2 ft., branches short ascending. Leaves 1·5-2 in. long; ·5-·75 in. wide, semi-amplexicaul, acute, 5-7-nerved from the base. Flowers in long rather lax spiciform racemes; bracts and calyx-segments lanceolate acute, pubescent; calyx ·25 in long; corolla yellow, ·6 in. long, spur slender subincurved. Capsule subglobose, ·3 in. in diameter, pale brown.

6. *LINARIA ODORA* M. Bieb. *Flor. Taur.-Cauc.* ii. 76; Benth., DC. *Prodr.* x. 274; Boiss. *Flor. Orient.* iv. 373. *L. venosa* Lindl.; Benth. l.c.; perennial, erect, much branched, glabrous, glaucous, leaves alternate, linear, pedicels short, spur shorter than corolla-tube; capsule globose, seeds smooth wide-margined.

W. HIMALAYA: Chitral, Harriess! Younghusband! Gilgit, Giles! BRITISH BELUCHISTAN: Kanozai, Duthie's Collector! DISTRIB. Northward to Siberia, westward to Central Europe.

Stem 2-2·5 ft. high, branches strict, numerous from the base. Leaves linear-subulate rather distant, entire, semi-terete, canaliculate, 1·25-1·75 in. long. Flowers few laxly shortly racemed; calyx small, glabrous or faintly puberulous, segments elliptic subobtusate or slightly acute, ·15 in. long; corolla yellow, ·75 in. long, throat bearded, spur straight or slightly incurved short. Capsule globose, ·25 in. in diam.

5. SCHWEINFURTHIA A. BRAUN.

1. SCHWEINFURTHIA SPHAEROCARPA A. Br.

Add to localities:—BRITISH BELUCHISTAN; Sibi, Lacey! Kaloo-kill, Duthie's Collector!

7. SCROPHULARIA LINN.

11. SCROPHULARIA VARIEGATA M. Bieb.

Add to localities:—E. HIMALAYA; Phari, King's Collector!

14. *SCROPHULARIA CABULICA* Benth., DC. *Prodr.* x. 316; Boiss. *Flor. Orient.* iv. 420; glabrous, glaucescent, leaves small oblong-lanceolate, repandly toothed, cymes few-flowered, divaricate, flowers small distant sessile; sepals oblong, hardly margined; staminode linear.

N.W. HIMALAYA: Chitral, Harriess! BRITISH BELUCHISTAN: Torkhan, etc., Duthie's Collector! Lacey!

Stems much branched from the base upwards, 1-1·5 ft. high; branches rigid sparsely leafy below, passing above into long strict thyrsoid panicles. Leaves ·5 in. long, oblong-lanceolate, teeth very faint. Cymes 5-7-flowered divaricately divided, the lower peduncled, the upper nearly or quite sessile.

9. WIGHTIA WALL.

1. WIGHTIA GIGANTEA Wall.

For WESTERN read EASTERN HIMALAYA; and add to localities of *F. B. I.*:—ASSAM; Khasia, *Hooker and Thomson! Simons! Jaintea, Wallich! King's Collector!* Manipur, *Watt!* BURMA: Bithoko Range, *Brandis!* Ruby Mines District, *King's Collector!* Shan Hills, *Alpin!*

A large epiphytic climber.

11. MIMULUS LINN.

1. MIMULUS NEPALENSIS Wall.

Add to localities of *F. B. I.*:—BURMA: N. Shan States, at Najong, 4,500 ft. *Gatacre!*

3. MIMULUS GRACILIS R. Br.

Add to localities of *F. B. I.*:—RAJPUTANA: Aboo, *King!* CENTRAL INDIA: Goona, *King!* Betul, *Duthie!* ASSAM: Naga Hills at Kohima, *Clarke!* Manipur, *Watt!* BURMA: Shan Hills, *Calcutta Collectors!*

14. LINDENBERGIA LEHM.

1. LINDENBERGIA GRANDIFLORA Benth.

Add to localities of *F. B. I.*:—NORTHERN CIRCARS: Ganjam, on Mahendragiri, at 4,500 ft., *Gamble 13954!*

A very interesting extension of distribution, especially since the species has not yet been met with on Parasnath or on the other subtemperate hills of Chota Nagpur.

2. LINDENBERGIA HOOKERI Clarke.

Add to localities of *F. B. I.*:—ASSAM: Dikri Hills, *Simons!* Brahmakund, *Masters!*

3. LINDENBERGIA PHILIPPINENSIS Benth.

Add to synonyms of the *F. B. I.*:—*L. siamensis Teijsm. & Binn., Nat. Tijds. Ned. Ind. xxv. 411 (1863); Miq. in Herb., ex Hook. f., Flor. Brit. Ind. iv. 262 (1884). Adenosma cuspidatum Benth. in Wall. Cat. 3852 (1829). A. macrophyllum Benth. in Wall. Cat. 3853 (1829). Pterostigma macrophyllum Benth. Scroph. Ind. 21 (1835); DC. Prodr. x. 380 (1846).*

Add to localities of *F. B. I.*:—ASSAM: Naga Hills, Zamba, *Collett!* and Pherima, *Prain's Collector!* Banks of Brahmaputra near Dibrugarh, weak plants on sand-banks apparently from seed washed down from higher elevations, *Prain's Collectors!*

4. LINDENBERGIA MACROSTACHYA Benth.

Delete synonyms of the *F. B. I.*:—*L. siamensis Miq. in Herb., Adenosma cuspidatum Benth. in Wall. Cat. 3852.*

Delete the localities:—MARTABAN, SIAM, CHINA.

Some confusion has grown up regarding the identity and the distribution as well as the synonymy of *Lindenbergia philippinensis* and *Lindenbergia macrostachya*; this requires to be definitely settled, if for no other reason than that, as the *Flora of British India* truly says, the one may prove only a variety of the other.

The species *Lindenbergia philippinensis* was first described as such in *DC. Prodr.* x. 377 (1846), the basis of the species being *Stemodia philippinensis* Cham. & Schlecht. *Linnaea* iii. 5. (1828), and the Philippines being then its only known locality. Hooker in *Flor. Brit. Ind.* iv. 261, also describes the species but gives it as occurring in Chittagong, Burma, Pegu, Tenasserim, and as extending to China and the Philippines.

The species *Lindenbergia macrostachya*, which is admitted by Bentham, as well as by Hooker, to be very nearly related to *L. philippinensis*, was first described by Bentham in *Scroph. Ind.* 22 (1835), and is again described in the *Prodromus* x. 376. It is thus, as a *Lindenbergia* at all events, older than *L. philippinensis*. But, since the basis of *L. macrostachya* is Bentham's own *Stemodia macrostachya* in *Wall. Cat.* 3925 (1829), the epithet *philippinensis* has priority over the epithet *macrostachya*. Bentham gives the distribution of *L. macrostachya* as from the N.-W. Himalaya as far as to Martaban and Moulmein. This, however, he only manages to do by including in the species his own *Adenosma cuspidatum* in *Wall. Cat.* 3852 (1829) which is a Burmese plant. Hooker does not put the distribution in this way. He says that *L. macrostachya* occurs in the N.-W. Himalaya and in Martaban; a somewhat different statement from Bentham's. But it seems clear, from the way in which the citations are made, that the species is considered Burmese solely on the strength of *Wall. Cat.* 3852. The further distribution Siam is clearly on the strength of *Lindenbergia siamensis* Miq. in *Herb.*; that of China is probably on the strength of specimens from China named *Lindenbergia macrostachya* by Hance and by Maximowicz.

The only tangible character in the various diagnoses of these two species is that the style in *Lindenbergia macrostachya* is glabrous, whereas in *L. philippinensis* it is hirsute at the base. The character of glabrous and pubescent leaves is unreliable; Hance's "*L. macrostachya*," for example, is undoubtedly *L. philippinensis* with nearly glabrous leaves; on the other hand Griffith and King have both collected in North-West India examples of undoubted *L. macrostachya* with leaves as pubescent as those of *L. philippinensis*.

As a rule the calyx is distinctive but even at best the difference does not amount to much and there are some Burmese examples of *L. philippinensis*, i.e., of the plant with a very hairy base to the style, that have calyx-teeth quite like those of *L. macrostachya* which always has a glabrous style. The corolla of *L. macrostachya* is smaller than that of *L. philippinensis*, but the character, being a relative one, is hardly sufficient for absolute diagnosis, and the corolla of *L. philippinensis* itself varies too much in size to make the character of more than subsidiary value.

By the only crucial character, "style hairy at the base," *Adenosma cuspidatum* Benth. is certainly *Lindenbergia philippinensis*! So also is "*L. siamensis* Miq." which is only *L. siamensis* Teijsm. & Binn., of which I have seen an authentic example and of which there is a drawing made from the living plant in the Calcutta Herbarium. By this test too the *Lindenbergia macrostachya*, from China, of Hance and Maximowicz, is *L. philippinensis*.

In short *Lindenbergia macrostachya* is a species strictly confined to Northern India; *L. philippinensis* is a species that extends from Central China, throughout the whole of Indo-China from the Brahmaputra river eastward to Upper Tenasserim

and to the Philippines. It has not, however, as stated in the *Index Kewensis*, been yet collected in any part of Malaya.

Whether the two plants deserve to be considered specifically distinct is rather an open question. They are easily distinguished in most cases and in any case are certainly very distinct varieties.

15. ADENOSMA R. Br.

1.* ADENOSMA INOPINATUM *Prain*; hirsute, leaves ovate-acute, serrate; flowers axillary sessile, 3 outer sepals in fruit very large, rounded at base, about twice as long as broad, 2 inner very small lanceolate. *A. ovatum* *Flor. Brit. Ind.* iv. 263 as to the Malay Peninsula locality, not of *Benth.*

MALAY PENINSULA; Malacca, *Griffith*! Singapore, *Anderson*! *Kunstler*!

Branching from the base, black when dry; branches 2-3 ft long, often rooting below, prostrate or ascending. Leaves 1·5-1·75 in., base cuneate, tapering to a very short petiole. Fruiting sepals nearly 5 in. long, membranous reticulate pubescent outer twice as long as broad. Flowers blue.

This is very near *A. ovatum* from which it differs by its narrower fruiting sepals and still nearer *A. subrepens* from which it differs by its rather larger, serrate not crenate and acute not obtuse leaves.

9. ADENOSMA HIRSUTUM *Kurz, Journ. As. Soc. Beng.* xlv. 2. 143 (1873). *Pterostigma hirsutum* *Miq. Flor. Ind. Bat. Suppl.* 562 (1860). *P. villosum* *Miq. Flor. Ind. Bat. Suppl.* 562 (1860) not of *Benth.*; stout, erect, densely tawny-tomentose, leaves very short-petioled, ovate ovate-lanceolate or lanceolate, acute or subobtuse, crenate-serrate, flowers in dense cylindric villous bracteate spikes, corolla blue; capsule ovate abruptly beaked.

NICOBARS: Kamorta, *Kurz*! MALAY PENINSULA, Prov. Wellesley, at Kuleang Ulu, *Curtis* 2238! DISTRIB. Sumatra, at Rau (*Teijsmann* 1157)! Bangka, near Djebus (*Teijsmann* 3429)!

Stems 2-4 ft., and leaves on both sides densely villous with tawny hairs, as are the leafy bracts 75 in. long at base of spikes, but gradually decreasing upwards. Spikes 2-3·5 in. long, very dense. Calyx-teeth lanceolate, the uppermost largest. Capsule straw-coloured.

The bracts of the Nicobar specimens are rather larger than these of the original Sumatra plant but the leaves are identical. The leaves of the Malayan Peninsula plant are rather narrower, but the bracts are exactly as in the Sumatra plant. The Bangka plant is rather more slender, but has the same compact heads with leafy bracts and tawny pubescence, and is very different from *Pterostigma villosum* *Benth.* (*Adenosma caruleum*) to which Miquel has referred it. The nearest ally of the species is *Adenosma capitatum* from which, however, it is very distinct.

8. ADENOSMA MACROPHYLLUM *Benth.*

This plant, founded on *Wall. Cat.* 3553, as represented in *Herb. Calcutta*, is only *Lindenbergia philippinensis*.

17. LIMNOPHILA R. BR.

2. LIMNOPHILA BALSAMEA Benth.

Add to localities of *F. B. I.* :—MALAY PENINSULA ; Perak, *Kunstler* 1027 !

Leaves rather dark green, flowers blue (*Kunstler*).

5. LIMNOPHILA MICRANTHA Benth.

Add to localities of *F. B. I.* :—MALAY PENINSULA ; Pahang, *Ridley* !

6. LIMNOPHILA ERECTA Benth.

Add to localities of *F. B. I.* :—MALAY PENINSULA ; Perak, *Wray* ! *Kunstler* ! Pahang, *Ridley* !

The stems are sometimes 12 in. long, and the leaves sometimes 1·5 in. long.

8. LIMNOPHILA VILLOSA *Bl. Bijdr.* 750. *L. javanica* *A. DC. Prodr.* x. 594. *L. pulcherrima* *Hook. f., Flor. Brit. Ind.* iv. 267.

11. LIMNOPHILA HIRSUTA Benth.

Add to localities of *F. B. I.* :—MALAY PENINSULA ; Perak, *Kunstler* ! *Scortechini* !

17. LIMNOPHILA SESSILIFLORA *Bl.*

Add to localities of the *F. B. I.* :—BURMA ; Hotha, *J. Anderson* ! Kachin Hills, *Shaik Mokim* ! ANDAMANS ; Port Blair, *King's Collector* !

The Burmese localities are very far north ; the species may however occur elsewhere but have been overlooked. At Port Blair it is to be suspected that the species has been accidentally introduced with seed of rice from India.

21. LIMNOPHILA GRATIOLOIDES *R. Br.*

Add to localities of *F. B. I.* :—CHITTAGONG ; Puttea, *Clarke* ! BURMA ; Rangoon, *Kurz* ! Tenasserim, *Helper* !

The great rarity of this species to the east of India Proper leads to the suspicion of introduction.

22. LIMNOPHILA GRIFFITHII *Hook. f.*

This interesting little species has also been collected in Perak by *Kunstler*, who reports the flowers as pure white, so that the plant from Nigeria referred to by *Hooker* may be actually the same.

18. HERPESTIS GÆRTN.

4. HERPESTIS CHAMÆDRYOIDES *H. B. & K., Nov. Gen. & Sp.* ii. 369 ; *Benth., DC. Prodr.* x. 393 ; decumbent, leaves short-petioled, ovate, toothed ; pedicels solitary, ebracteate ; upper sepal ovate, 2 lower ovate or oblong ; capsule ovate.

LOWER BENGAL : Shibpur, plentiful.

Quite glabrous, not at all succulent ; branches 3-6 in. long. Leaves 5-7·5 in. long, narrowed to the distinct petiole. Pedicels as long as or longer than the leaves. Fruiting calyx 3 in. long. Corolla yellow, rather longer than calyx.

This small American weed has, of late years, become quite naturalized on paths and in waste corners in the neighbourhood of Calcutta.

22. CURANGA JUSS.

1. CURANGA AMARA *Juss.*

Add to localities of *F. B. I.*:—MALAY PENINSULA; Perak, *Scortechini*! Pahang, *Ridley*!

23. TORENIA LINN.

3. TORENIA CORDIFOLIA *Roxb.*

In all the specimens examined by the writer the lower filaments are distinctly toothed.

5. TORENIA ASIATICA *Linn.*

Add to localities of *F. B. I.*:—MALAY PENINSULA: Perak, *Scortechini*! *Curtis*!

Add to distribution:—Sumatra.

6.* TORENIA RUBENS *Benth., DC. Prodr.* x. 410.

This is included under *T. vagans* in the *F. B. I.*, and may, as Hooker suggests, be but a form of that species. The two are, however, very easily distinguished in the Herbarium by the smaller, often minute, teeth on the longer filaments of *T. rubens*. They are still more easily distinguished in the field by the colour of the flowers: *T. vagans* has a fairly uniform blueish-purple or dull-violet corolla; *T. rubens* has a corolla with a pale lilac or nearly white tube with three bright violet-purple spots.

10. TORENIA FLAVA *Ham.*

Add to localities of *F. B. I.*:—MALAY PENINSULA: Perak, *Kunstler*!

Kunstler describes the corolla of this as bright yellow.

11. TORENIA CILIATA *Sm.*

Add to synonyms of *F. B. I.*:—*T. flava* *Miq. Flor. Ind. Bat. Suppl.* 237.

Add to localities of *F. B. I.*:—MALAY PENINSULA: Perak, *Scortechini*! *Kunstler*! *DISTRIB.* Sumatra (*Teijsmann* 1182)!

Teijsmann's original specimens of "*T. flava* *Miq. non Ham.*" are marked *corolla cœrulea*. Two species of *Torenia* collected by *Teijsmann* and described by *Miquel* I have not seen. One of these is *T. lamponga* which from *Miquel's* description ought certainly to be *T. peduncularis*; the other is *T. cœrulea* and it ought equally certainly to be *T. ciliata*.

12. TORENIA BENTHAMIANA *Hance, Ann. Sc. Nat. Ser. 4. xviii.* 226 (1862); decumbent diffuse rooting at the nodes, finely tawny-tomentose; leaves petioled deltoid-ovate acute, serrate; pedicels axillary larger than the calyx or the leaves; fruiting calyx oblong, subclavate, 5-angled, keeled and channelled, not winged; lower filaments with a very long slender tooth.

MALAY PENINSULA: Johore, *Ridley* 4160! DISTRIB. China (*Hance* 5901)! Cochinchina.

Stems slender, up to a foot long; *leaves* .75-1 in. long including the petiole .2-.25 in. long, base rounded truncate. *Calyx* in fruit .5 in. long, peduncle .75-1.5 in. long. *Corolla* .6 in. long, yellow with purple eye.

This seems to be the *T. flava* Bot. Mag. t. 6,700 not of Ham.

24. VANDELLIA LINN.

3. VANDELLIA STEMONOIDES *Miq. Flor. Ind. Bat. Suppl.* 563 (1860). *V. Hookeri Clarke Flor. Brit. Ind.* iv. 280 (1884). DISTRIB. Bangka, (*Teijsmann* 3242)!

6. VANDELLIA HIRSUTA *Benth.*

Add to localities of *F. B. I.*:—MALAY PENINSULA: Perak, *Kunstler*! Pahang, *Ridley*!

7. VANDELLIA SCABRA *Benth.*

Add to localities of *F. B. I.*:—MALAY PENINSULA: Prov. Wellesley, at Butterworth, *King*! Singapore, *Kunstler*!

8. VANDELLIA MOLLIS *Benth.*

Add to localities of *F. B. I.*:—BURMA: Chin Hills, *Abdul Huq*! Add to DISTRIB.:—Sumatra, (*Forbes* 1981)! Java, (*Kurz* 555)!

8*. VANDELLIA PUNCTATA *Prain*; procumbent, quite glabrous; leaves shortly petioled orbicular-ovate, succulent, crenate-serrate, distinctly punctate; pedicels in axillary and terminal racemes much longer than the calyx; sepals lanceolate glabrous not quite so long as the ovate capsule.

SHAN HILLS: Fort Stedman and Taungyi, *King's Collectors*!

Stem creeping below 12-18 in. long, somewhat succulent. *Leaves* .5-.75 in. long, quite glabrous. *Racemes* up to 2.5 in. long, distantly 10-12-flowered; pedicels very slender .4 in. long. *Sepals* .15 in. long, lanceolate glabrous except for the finely ciliate-serrate margins. *Corolla* .3 in. long, pale purple. *Filaments* glabrous. *Capsule* .2 in. long.

This species is most nearly related to *V. scabra* and *V. mollis*, the flowers and capsules much resembling those of the former, the influence being exactly that of the latter. From both it differs in its quite glabrous leaves which are thicker than in either and are very distinctly punctate.

12. VANDELLIA PEDUNCULATA *Benth.*

Add to synonyms of *F. B. I.*:—*V. cerastioides Coll. & Hemsl., Journ. Linn. Soc.* xxviii. 100.

Add to localities of *F. B. I.*:—BURMA: Tagaung, *J. Anderson*! Poneshee, *J. Anderson*! Pegu, *Kurz*! Shan Hills, *Collett*! MALAY PENINSULA: Malacca, *Harvey*! Singapore, *Kunstler*! Add to DISTRIB.:—Sumatra (*Beccari* 873)!

25. ILYSANTHES RAFIN.

1. ILYSANTHES HYSSOPOIDES *Benth.*

Add to localities of *F. B. I.* :—CHOTA NAGPUR : Sirguja, *J. J. Wood* !

26. BONNAYA LINK & OTTO.

2. BONNAYA REPTANS *Spreng.*

Add to localities of *F. B. I.* :—MALAY PENINSULA : PERAK, *Scortechini* ! *Wray* ! Singapore, *Hullett* ! *Ridley* ! Pahang, *Ridley* !

This species appears to be common in the Eastern Peninsula, *B. brachiata*, on the other hand, being rare. The latter was collected at Singapore by Wallich in 1822, but had been recorded by no one else till recently when it was collected by Ridley in Pahang. The two are very similar and perhaps *B. brachiata* may have been overlooked.

4. BONNAYA PEDUNCULARIS *Benth.*

This species is based on *Wall. Cat.* 3865, and, so far as the Calcutta example of that number is concerned, is simply typical *Vandellia angustifolia*, because it has 4 perfect stamens.

32. SIBTHORPIA LINN.

1. SIBTHORPIA PINNATA *Benth.*

Add to localities of the *F. B. I.* :—SIKKIM : Tongloo, 10,000 ft. *Lister* ! *Clarke* ! *Gamble* ! *King's Collectors* !

33. HEMIPHRAagma WALL.

1. HEMIPHRAagma HETEROPHYLLUM *Wall.*

Add to localities of *F. B. I.* :—NAGA HILLS : Japvo, *Clarke* ! Manipur, *Watt* ! BURMA : Kachin Hills, *Prain's Collectors* ! North Shan States, Hantong Stream, 5,200 ft., *Gatacre* !

39. VERONICA LINN.

13. VERONICA CANA *Wall.*

VAR. *robusta* *Prain* ; stems stoutish, up to 2 ft. high ; leaves larger over 2 in. long ; more densely tomentose everywhere ; calyx-segments acute ; fruit less deeply 2-lobed than in the type.

SIKKIM : Phallut, Tongloo, Kalipokri, Tassijour and elsewhere in Western Sikkim, common.

Larger in all its parts and more robust than the typical plant.

15. VERONICA JAVANICA *Bl.*

Add to localities of *F. B. I.* :—NILGIRIS : *Gamble* !

40. ALECTRA THUNB.

2. ALECTRA THOMSONI *Hook. f.*

Add to localities of *F. B. I.* :—Noda in Singbhum, *Clarke* ! Raj-

mahal Hills near Sahibganj, *Kurz*! Chanda District, C. Provinces, at Pátal Páni, near Alapilli, *Duthie*!

42. STRIGA LOUR.

3. STRIGA LUTEA *Lour.*

Add to localities of *F. B. I.*:—ANDAMANS: Port Blair, *Prain*! *King*! MALAY PENINSULA: Pahang, *Ridley* (the yellow-flowered form)! Singapore, *Kurz* (the pink-flowered form)!

44. CENTRANTHERA R. Br.

1. CENTRANTHERA GRANDIFLORA *Benth.*

Add to localities of *F. B. I.*:—ASSAM: Manipur, *Watt*! BURMA: Chindwin Valley, *Prazer*!

45. SOPUBIA HAM.

2. SOPUBIA TRIFIDA *Ham.*

Add to localities of *F. B. I.*:—NAGA HILLS; common, *Prain*! Manipur, *Watt*! BURMA; Chin Hills, *Prazer*! Shan Hills, *King's Collectors*! DISTRIB. Bali (*Zollinger*)!

A specimen of this species, n. 3,889 *Zollinger*, is in Herb. Calcutta, with the MSS. name *Sopubia sulphurea* *Kurz*. It was collected among the volcanic ash of Mt. Bator, in Bali, at 4-5,000 ft. in Sept. 1837. Of *Sopubia stricta*, which was already recorded from Java, there is also a specimen from Madura, collected by *Teijsmann*.

47. LEPTORHABDOS SCHRENK.

2. LEPTORHABDOS LINIFOLIA *Walp.*

Add to localities of *F. B. I.*:—Hazára; Kagán Valley, *Duthie's Collector*! Gilgit, 8,000-9,000 ft., *Giles*! Lahul, *Jaeschke*!

This form, which *Duthie's* collectors have also collected more than once in Baltistan, differs both from *L. parviflora* and from *L. virgata* in the points noted by *Hooker*, but it hardly differs more from either of these forms than they do from each other, and the *Flora of British India* is almost certainly right in suggesting that there is but one species in the genus.

48. PHTHEIROSPERMUM BUNGE.

3. PHTHEIROSPERMUM TENUISECTUM *Bur. & Franch. Journ. de Bot. v. 129 (1891)*; *Prain in Hook. Icon. Pl. t. 2211 (1894)*; glandular-pubescent; leaves ovate-acute 2-3-pinnatisectly dissected, segments linear; calyx-lobes subequal; corolla-tube nearly twice as long as calyx.

EASTERN HIMALAYA: Chumbi Valley at Tassi-chen-doom, *King's Collector*! DISTRIB. Tibet, W. China.

Stems slender from a perennial woody rootstock, many, simple or sparingly branched. Leaves 75 in. long, nearly 1 in. wide. Flowers axillary, shortly pedi-

celled. *Calyx* .3 in. long. *Corolla* .5 in. long, .2 in. wide. *Capsule* compressed beaked. *Seeds* with reticulate testa.

52. PEDICULARIS LINN.

11.* *PEDICULARIS DIFFUSA* Prain, *Journ. As. Soc. Beng.* lxii. 2, 7, t. 1 (1893); glabrescent, stems erect or ascending, cauline leaves 4-nately whorled petioled ovate-oblong pinnatisect, segments oblong-obtuse, incised-serrate; flowers whorled, whorls numerous distinct; corolla-tube twice as long as calyx, upper lip slightly curved, apex somewhat incurved not beaked; lower lip 3-lobed, lobes oblong-ovate with sinuate margins the lateral one-half larger than the central; stamens inserted opposite top of ovary, anterior filaments bearded above.

EASTERN HIMALAYA: Sikkim, Mt. Tankra, Gammie!

Stems 1.5-2 ft. long; cauline leaves .75-1 in. long, petioles .25-.4 in. long, radical leaves evanescent. *Flowers* in rather distant whorls, except the uppermost; bracts leafy. *Calyx* .25 in. long; lobes rather large, unequal; the anterior and lateral ovate, incised-serrate, the upper deltoid entire, small; lateral twice as large as anterior 4 times as large as upper. *Corolla* rose; tube widened upwards, .4 in. long; limb .2 in. wide; lip .3 in. wide. *Capsule* narrowly lanceolate, acute, twice as long as calyx, .5 in. long. *Seeds* ovoid, testa black, finely reticulate.

Most nearly related to *P. verticillata* Linn. and *P. refracta* Maxim., but while differing considerably from both in habit and foliage, it further differs from *P. verticillata* in having a calyx with large teeth and with the tube reticulated throughout, and further differs from *P. refracta* in having the anterior and lateral calyx-teeth serrate instead of entire. In habit it most resembles *P. flexuosa*, but is glabrescent, where that species is hirsute, or still more *P. gracilis* var. *macrocarpa*, from which it is hardly distinguishable in fruit. The flowers of these two last species have, however, long-beaked corollas.

30. PEDICULARIS FLAGELLARIS Benth.

Add to synonyms of *F. B. I.*:—*P. Gammieana* Prain, *Journ. As. Soc. Beng.* lviii. 2. 260; *Ann. Roy. Bot. Gard.* iii. 162.

32. PEDICULARIS CURVIPES Hook. f.; Bot. Mag. t. 7735.

Add to description of *F. B. I.*:—Corolla-tube not longer than the calyx; lower lip sessile, .6 in. wide, pale rose-coloured, white towards the mouth, 3-lobed, glabrous, lateral lobes obliquely rounded, median much smaller, orbicular, emarginate or obcordate; upper lip puberulous, bright rose-red erect and inflated, arcuate, ending in a decurved slender beak.

53. LATHRÆA LINN.

2. *LATHRÆA PURPUREA* Cummins, *Journ. As. Soc. Beng.* lxiv. 2. 137 (1895); calyx cylindric campanulate, hirsute, 10-ribbed, slightly 2-lipped.

EASTERN HIMALAYA: Bhutan, Dichu Valley, 12,000 ft. Cummins! Sikkim, Singalelah, 13,000 ft., King's Collector!

Diffusely branched; *stems* short, 3-4 in., purple, slender; *scales* purple, orbicular, obtuse, opposite, short-petioled; *flowers* racemed rather long-pedicelled, erect; bracts sessile like the stem-scales. *Calyx* purple. *Corolla*-tube purple, about twice as long as calyx, '75 in. long; upper lip purple hooded, subacutely toothed below the apex on both sides; lower lip 3-lobed, purplish-white with dark purple veins. *Stamens* didynamous, included; anterior filaments pubescent throughout and one-third shorter than the posterior which are only pubescent towards the apex. *Ovary* 2-lobed, purplish; style simple; stigma very small, subexserted; each chamber 10-15-ovuled.

Nearest to *L. clandestina* Linn., but differing in its nearly uniform purple colour, its subtire calyx, and its smaller corolla with subacute not rounded subapical teeth.

